

# Certificate

## Food regulatory evaluation of ViskoTeepak's "Fibrous" cellulose casing

Client: ViskoTeepak Belgium NV  
BE-3920 Lommel

Order: PA/4292/15

Samples: Cellulose casings "Fibrous" (which will be sold under various trade names listed in the annex)

### Scope

ViskoTeepak's casings "Fibrous" are cellulose based casings. The printed casings undergo various converting steps and will be used at different application conditions (see specified in the test reports of order PA/4292/15). The intended applications include the packaging of processed meat products (e.g. ham, salami, bacon, sausages) and natural cheeses.

Compliance of the cellulose casings with the regulatory requirements of Article 3 of the EU Framework Regulation (EC) No 1935/2004 was investigated. For this purpose ViskoTeepak disclosed the formulation of the cellulose casings and the ink supplier disclosed the formulation of used printing ink system to Fraunhofer IVV.

### Sample material

The summary of the food regulatory assessment of the cellulose casings refers to the following Fraunhofer IVV test reports:

- Test report PA/4292/15 part 1, dated 14.7.2016 - Determination of the overall migration from the cellulose casings "Fibrous"
- Test report PA/4292/15 part 4, dated 14.7.2016 - Sensory testing of the printed cellulose casing "Fibrous"
- Test report PA/4292/15 part 5, dated 14.7.2016 – Determination of heavy metals and inorganic compounds in the cellulose casings "Fibrous"
- Test report PA/4292/15 part 6, dated 15.7.2016 – Determination of the content of polycyclic aromatic hydrocarbons (PAHs) in the printed cellulose casings "Fibrous"
- Test report PA/4292/15 part 7, dated 7.12.2015 – Determination of colour release from the cellulose casings "Fibrous"
- Test report PA/4292/15 part 9, dated 20.1.2016 – Determination of chromium in the aqueous extract of a cellulose casing and in the casing material

- Test report PA/4292/15 part 11, dated 15.11.2016 - Screening analysis for the migration potential of printing ink compounds from the printed cellulose casings "Fibrous"
- Test report PA/4292/15 part 12, dated 4.10.2016 – Determination of the specific migration of 2,4-dimethylaniline (CAS 95-68-1) and 3-amino-4-methoxybenzanilide (CAS 120-35-4)
- Test report PA/4292/15 part 13, dated 15.11.2016 – Screening analysis of migration solutions of the printed cellulose casings "Fibrous"
- Test report PA/4292/15 part 15, dated 15.11.2016 – Determination of the migration potential of a crosslinker in printed casings
- Test report PA/4292/15 part 16, dated 21.11.2016 – Determination of the overall migration from the cellulose casings "Fibrous"
- Test report PA/4292/15 part 18, dated 19.12.2016 – Determination of primary aromatic amines and a confidential printing ink substance

#### Food regulatory status of the used components

Based on ViskoTeepak's information on the formulation of the cellulose casings and based on the ink supplier's information the food regulatory status of the used components was evaluated according to the following European, Swiss and German requirements.

- Plastics Regulation (EU) No 10/2011 (last amendment by Regulation (EU) No 2016/1416) -Strictly speaking cellulose based casings are not covered by the Plastics Regulation (EU) No 10/2011. However this regulation may also be used for the assessment of other materials than plastics that are not yet regulated on EU level.
- BfR Recommendation IX. Colorants for Plastics and other Polymers Used in Commodities (as of 1.2.2015)
- Council of Europe Resolution AP (89)1 on the use of colorants in plastic materials coming into contact with food (as of 13th September 1989)
- Commission Regulation (EC) No 1881/2006 setting maximum levels for certain contaminants in foodstuffs (as of 19th December 2006)
- BfR Recommendation XLIV. Artificial Sausage Casings (as of 1.10.2014)
- Swiss Ordinance on materials and articles in contact with food (SR 817.023.21)
- Council of Europe's policy statement on printing inks applied to the non-food surface of food packaging (2<sup>nd</sup> version dated 10.10.2007)

Summary of performed analyses:

The cellulose casings "Fibrous" were investigated for the overall migration into 10 % ethanol and 3 % acetic acid by total immersion at the contact conditions 2 h by reflux followed by 10 days at 40 °C according to the European Standard EN 1186-3. In addition, the overall migration was determined into the food simulants 95 % ethanol and isooctane (as alternative food simulants for olive oil) by total immersion at the contact conditions 24 hours at 40 °C (95 % ethanol) and 24 h at 60 °C followed by 10 d at 40 °C (isooctane) according to the European Standard EN 1186-15 (Fraunhofer IVV test report PA/4292/15 part 1, dated 14.7.2016 and test report PA/4292/15 part 16, dated 21.11.2016). The time and temperature conditions applied for the migration tests were determined based on the process cycles as delivered by ViskoTeepak.

In addition, the migration potential and the specific migration of several components of the cellulose casings "Fibrous" was analysed (Fraunhofer IVV test report PA/4292/15 part 9, dated 20.1.2016; test report PA/4292/15 part 12, dated 4.10.2016; test report PA/4292/15 part 15, dated 15.11.2016 and test report PA/4292/15 part 18, dated 19.12.2016). Additionally, the content of polycyclic aromatic hydrocarbons (PAHs) in the cellulose casings was investigated (Fraunhofer IVV test report PA/4292/15 part 6, dated 15.7.2016).

Furthermore the cellulose casings "Fibrous" were investigated for possibly migrating components originating from the printing ink by screening analyses. For this purpose the printed casings were investigated by headspace gas chromatography - flame ionisation detection / mass spectrometry (GC-FID/MS) and dichloromethane extracts and migration solutions of the casing were investigated by GC-FID/MS (Fraunhofer IVV test report PA/4292/15 part 11, dated 15.11.2015 and test report PA/4292/15 part 13, dated 15.11.2016).

In addition, the cellulose casings "Fibrous" were investigated for the content of the heavy metals mercury, cadmium, chromium, copper, lead, arsenic, tin, zinc, barium, cobalt, lithium, antimony, iron and manganese. The cellulose casing was solved with nitric acid by microwave decomposition and analysed by ICP-MS (inductively coupled plasma mass spectrometry) according to the DIN method 17294-2 (Fraunhofer IVV test report PA/4292/15 part 5, dated 14.7.2016). In addition the chromium was determined in the aqueous extracts by ICP-MS (Fraunhofer IVV test report PA/4292/15 part 9, dated 20.1.2016).

Additionally, sausages packed in the printed cellulose casing "Fibrous" were investigated for a change or deterioration of the organoleptic characteristics of the packed sausages. The sensory tests of the sausages were carried out according to DIN 10964 and DIN 10955 by a panel of seven trained testers (Fraunhofer IVV test report PA/4292/15 part 4 dated 14.7.2016).

The "Fibrous" casings are used in different colours. Thereby colour release was determined for all coloured samples according to BfR Recommendation BII (test report PA/4292/15 part 7 dated 7.12.2015).

Food regulatory assessment:

The overall migration limit is 10 mg/dm<sup>2</sup> contact surface according to Art. 12 of the European Plastics Regulation (EU) No 10/2011 (last amendment by Regulation (EU) No 2016/1416).

The investigated samples "Fibrous" are in compliance with the overall migration limit for aqueous and acidic foods as well as for fatty foods (e.g. processed meat products such as ham, salami, bacon, sausages and natural cheese) at cooking applications up to 100 °C for up to 2 hours followed by long term storage at room temperature or below.

The migration potential of polycyclic aromatic hydrocarbons (PAHs) was investigated. Migration of the investigated components complies with the respective restrictions according to the Plastics Regulation (EU) No 10/2011 resp. according to the safety requirements of Article 3 of the European Framework Regulation (EC) No 1935/2004 for all types of food (e.g. processed meat products such as ham, salami, bacon, sausages and natural cheese) at cooking applications up to 100 °C for up to 2 hours followed by long term storage at room temperature or below.

Furthermore, the investigated "Fibrous" casing complies with the limit of 100 mg/kg for the sum of lead, cadmium, chromium(IV) and mercury according to the European Directive 94/62/EC (last amendment by Regulation (EC) No 219/2009) on packaging and packaging waste.

According to Article 3 of the EU Framework Regulation (EC) No 1935/2004 and according to § 31 of the German "Lebensmittel- und Futtermittelgesetzbuch" (LFGB) materials and articles in contact with food shall be manufactured so that, under normal or foreseeable conditions of use, they do not transfer their constituents to food in quantities which could bring about a deterioration in the organoleptic characteristics of the food. Based on the performed sensory analysis, the investigated sausage sample packed in the printed cellulose casing "Fibrous" is in compliance with the sensory requirements of the EU Framework Regulation (EC) No 1935/2004 and of § 31 LFGB.

Based on the results of the migration, screening and sensory analyses as well as on the information on the used materials provided by the client ViskoTeepak and its suppliers, we come to the conclusion that the investigated printed cellulose casings "Fibrous" are in compliance with the requirements of Article 3 of the EU Framework Regulation (EC) No 1935/2004 for the intended packaging of processed meat products (e.g. ham, salami, bacon, sausages) and natural cheeses.

With respect to the colourings, all coloured investigated "Fibrous" casings are in compliance with the requirement of no colour release according to the German BfR recommendation IX. "Colorants for plastics and other polymers used in commodities" and to the Council of Europe Resolution AP (89)1 "On the use of colorants in plastic materials coming into contact with food".

Signatures:

Fraunhofer Institut  
Verfahrenstechnik  
und Verpackung

Freising, 30.01.2017




Dr. Diana Kemmer  
(Dep. Head of Migration Laboratory)

Maria Gierl  
(Scientist in Charge)

**Annex: trade names of "Fibrous" casings**

Brandnames: "ST casings", "XL casings", "FLX (Flex)", "Brilliant - Satin",  
"Xtreme", "Preserve", "Smoke Barrier", "CRF", "MAX"

Types: "Regular", "EP Easy Peel" "MC MeatCling", "Net casing", "RTU  
Casing", "Shirred casing", "ZIPIT-ZIPIT/RTU", "Sewed casings  
Sewing", "Sewed casings DLO", "Sewed casings Ribbon"

Printing ink system: "Ghirlandina", "Divina", "Chagalca", "Rugewalder"

Colours:

<b>Colour Code</b>	<b>Colour name</b>	<b>Colour Code</b>	<b>Colour name</b>
05	Blue 05	91	Brown 91
07	B 07	94	Brown 94
13	Amber 13	96	Brown Mahogany 96
17	Mahogany 17	97	Red 97
18	Red 18	98	Brown 98
30 / 40	Nat 30 / Nat 40	99	Red 99
35	Nat 35	10	Mahogany Light 10
36	Orange Brown 36	18	Red 18
41	Black 41	20	Red 20
55	Nat 55	34 / 35	Nat 34 / Nat 35
79	Cherry Red 79	42	Red 42
82	Orange Light 82	56	Natural Smoke 56
83	Amber 83	58	Gold 58
84	Brown Mahogany 84	92	Brown 92
85	Brown 85	93	Brown 93
86	Brown 86	37	Meranti 37
87	Beige 87	23	Siena 23
89	Brown 89	XXXXX	HasselNut
90	Nat 90	88	HasselNut II